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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/916,682	07/30/2001	Yasutaka Ito	110580.01	9838

25944 7590 11/03/2004

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EXAMINER

PAIK, SANG YEOP

ART UNIT	PAPER NUMBER
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3742

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/916,682

Applicant(s)

ITO, YASUTAKA

Examiner

Sang Y Paik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 9,10,12-17 and 19-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9,10,12-17 and 19-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 9, 12-16 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al (US 6,080,970) or Arami et al (US 5,904,872) in view of Koontz (US 5,877,473).

Yoshida et al or Arami et al disclose the ceramic heater claimed including a disk-shaped ceramic substrate with a heat-generating pattern, having a combination of spiral and bending pattern, disposed in the outer region of the ceramic substrate, a semiconductor wafer heated on the surface opposite to the surface of the ceramic substrate. Arami et al further show that the disk-shaped ceramic substrate has the diameter of 8 inches or larger to accommodate a wafer having a diameter of 8 inches or 203 mm. Yoshida et al or Arami et al teach that the ceramic substrate can be made of aluminum nitride. However, Yoshida et al and Arami et al do not show that the bending portion describes an arc having a curvature radius within a range of 0.1 mm to 20 mm with the bending width in a range of .1 mm to 20 mm.

Koontz shows a heating pattern having a bending portion whose curvature radius from 8.8 mm which is within the claimed range to keep the width of heating element consistently equal. Koontz teaches that such curvature reduces cold and hot spots along the heating element.

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In view of Koontz, it would have been obvious to one of ordinary skill in the art to adapt Yoshida et al or Arami et al with the claimed curvature bending to eliminate hot and cold spots and provide the width of the bending portion within the claimed range or any other range as long as the width is constant to have a consistent electrical resistivity to provide for an uniform heating across its heating surface.

With respect to claims 14 and 21, it would have been obvious to one of ordinary skill in the art to modify the diameter of the ceramic substrate more than 300 mm or more since the size of the ceramic substrate would have been dependent upon the size of the wafer that is being heated by the ceramic substrate and to provide sufficient heating area to encompass the entire wafer area for uniform heating across the wafer.

3. Claims 10 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al or Arami et al in view of Koontz as applied to claims 9, 12-16 and 19-22 above, and further in view of Ito et al (US 6,072,162) or Furuya et al (US 6,084,215).

Yoshida et al or Arami et al in view of Koontz discloses the ceramic heater claimed except having through holes for inserting supporting pins.

Ito et al and Furuya et al shows a wafer supporting heater having a plurality of through holes for inserting supporting pins to support a wafer. In view of Ito et al or Furuya et al, it would have been obvious to one of ordinary skill in the art to adapt Yoshida et al or Arami et al, as modified by Koontz, with the through holes to provide the supporting pins so that the wafer can be conveniently moved to or from the ceramic substrate during the wafer treating process.

***Response to Arguments***

4. Applicant's arguments filed 9/29/04 have been fully considered but they are not persuasive.

The applicant argues Koontz does not show the claimed curvature radii and the width, and that since Koontz does not teach its use in semiconductor field, it would not be applicable in such field.

Koontz clearly shows the curvature radii ranges from 8.8 mm (column 7, lines 63). While Koontz does not show the claimed width, Koontz teaches that the width of the bending is maintained with a consistent same width. This is because if the width of the heating element were not maintained within the same width, it would change the electrical resistivity that would produce varying power. This is precisely the reason why Koontz desired to have such curvature radii and the same bending with. Since Koontz teaches the advantages or benefits pertinent to the problems of the applicant's invention, Koontz teachings would be applicable in the field of endeavor that relates to the electrical resistance heating element including the semiconductor field which utilizes the electrical heating element and its associated heating devices.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y Paik whose telephone number is 703-308-1147. The examiner can normally be reached on M-F (9:00-4:00) First Friday Off.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. R.

Sang Y Paik  
Primary Examiner  
Art Unit 3742

syp